

# Michael Ramscar

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## **1. Research Interests**

Language; learning; mental representation; neuro-cognitive development; categorization.

- (1) Learning and the nature of human knowledge representation
- (2) The statistical structure of human communication systems
- (3) Learning across the lifespan
- (4) Learnability in language acquisition
- (5) Language learning and bilingualism
- (6) The development of human learning processes
- (7) The nature and development of cognitive control
- (8) Imitation and the development of cognitive agency
- (9) The relationship between explicit and implicit learning
- (10) Applications of learning research

## **2. Professional Experience**

**Senior Researcher** (faculty rank)

University of Tübingen, Linguistics Department (2011-present)

**Assistant Professor of Psychology**

Stanford University, Psychology Department (2002-2010)

**Lecturer** (faculty rank), Computational Models of Human Cognition

Edinburgh University, Division of Informatics (1999-2002)

**Lecturer**

Edinburgh University, Department of Artificial Intelligence (1997-1999)

**Research Associate**

Edinburgh University, Department of Architecture (1991-1996)

## **3. Education**

**APA Advanced Training Institute in fMRI** (2001)

Massachusetts General Hospital, Boston, MA

**Ph.D., Cognitive Science & Artificial Intelligence** (1995-1999)

Edinburgh University, Edinburgh, Scotland

**MSc, Computer Science & Electronic Engineering** (1989-1990)

Strathclyde University, Strathclyde, Scotland

**B.A., Philosophy, with Honours** (1986-1989)

Kings College, University of London, England

## **4. Research Awards & Grants**

2007	<b>\$750,000</b>	NSF grant in support of research into the probabilistic nature of grammar (Co-PIs: Joan Bresnan, Dan Jurafsky & Tom Wasow).
2006	<b>\$400,000</b>	NSF CAREER Award in support of language learning research.
2003	<b>\$25,000</b>	Stanford Office of Technology Licensing (OTL) grant in support of language learning research.
1999	<b>\$100,000</b>	Engineering and Physical Sciences Research Council (EPSRC) grant in support of analogy modelling research
1999	(declined)	Awarded one of 5 “Enterprise Ireland” Post-Doctoral Fellowships
1994	<b>\$200,000</b>	EPSRC grant in support of design modelling research.

## **5. Refereed Publications**

### **5.1 Journal Articles**

1. **Ramscar, M.**, Sun, C.C., Hendrix, P. & Baayen, R. H. (2017) The Mismeasurement Of Mind: Lifespan Changes in Paired Associate Test Scores Reflect The ‘Cost’ Of Learning, Not Cognitive Decline, Psychological Science, *In press*.
2. Milin, P., Feldman, L. B., **Ramscar, M.**, Hendrix, P., & Baayen, R. H. (2017). Discrimination in lexical decision. PLoS One, 12(2), e0171935.
3. **Ramscar, M.** (2016). Learning and the replicability of priming effects. Current Opinion in Psychology, 12, 80-84.
4. Blanco, N.J., Love, B.C., **Ramscar, M.**, Otto, A.R., Smavda, K., & Maddox, W.T (2016). Exploratory decision-making as a function of lifelong experience, not cognitive decline. Journal of Experimental Psychology: General, 145(3), 284.
5. Baayen, R. H., Shaoul, C., Willits, J., & **Ramscar, M.** (2016). Comprehension without segmentation: A proof of concept with naive discriminative learning. Language, Cognition and Neuroscience, 31(1), 106-128.
6. Westbury, C., Shaoul, C., Moroschan, G., & **Ramscar, M.** (2016). Telling the world’s least funny jokes: On the quantification of humor as entropy. Journal of Memory and Language. (86), 141-156.
7. Baayen, R.H., Milin, P. & **Ramscar, M.** (2016) Frequency in lexical processing. Aphasiology (30): 11, 1174-1220.
8. **Ramscar, M.**, & Port, R. F. (2016). How spoken languages work in the absence of an inventory of discrete units. Language Sciences, 53, 58-74.
9. **Ramscar, M.**, Hendrix, P., Shaoul, C., Milin, P. & Baayen, R.H. (2014). The myth of cognitive decline: Nonlinear dynamics of lifelong learning. Topics in Cognitive Science, 6, 5-42.
10. **Ramscar, M.** & Baayen, H. (2014) Why our brains work better with age. New Scientist, 2961, 28-29.

11. **Ramscar, M.**, Dye, M., & McCauley, S. (2013). Error and expectation in language learning: The curious absence of ‘mouses’ in adult speech. Language, 89(4), 760-793.
12. **Ramscar, M.**, Dye, M., & Klein, J. (2013). Children value informativity over logic in word learning. Psychological Science, 24(6), 1017-1023.
13. **Ramscar, M.**, Dye, M., Gustafson, J., & Klein, J. (2013). Dual routes to cognitive flexibility: Learning and response conflict resolution in the dimensional change card sort task. Child Development, 84(4), 1308-23.
14. **Ramscar, M.**, Hendrix, P., Love, B. & Baayen, H. (2013) Learning is not decline: The mental lexicon as a window into cognition across the lifespan. The Mental Lexicon, 8(3), 450-481.
15. **Ramscar, M.** & Baayen, H. (2013). Production, comprehension and synthesis: A communicative perspective on language. Frontiers in Language Sciences, 4, 233. doi: 10.3389/fpsyg.2013.00233
16. **Ramscar, M.** (2013). Suffixing, prefixing, and the functional order of regularities in meaningful strings. Psihologija, 46(4), 377-396.
17. Baayen, R.H., Hendrix, P., & **Ramscar, M.** (2013). Sidestepping the combinatorial explosion: Towards a processing model based on discriminative learning. Language and Speech, 56(3), 329-347.
18. **Ramscar, M.**, Dye, M., & Hubner, M. (2013). When the fly flied and when the fly flew: How semantics can make sense of inflection. Language and Cognitive Processes, 28(4), 468-97.
19. Arnon, I. & **Ramscar, M.** (2012). Granularity and the acquisition of grammatical gender: How order of acquisition affects what gets learned. Cognition, 122(3), 292-305.
20. **Ramscar, M.**, Dye, M., Popick, H.M., & O'Donnell-McCarthy, F. (2011). The enigma of number: Why children find the meanings of even small number words hard to learn and how we can help them do better. PLoS ONE, 6(7), e22501. doi:10.1371/journal.pone.0022501
21. **Ramscar, M.** & Dye, M. (2011). Learning Language from the Input: Why level ordering can't explain noun-compounding. Cognitive Psychology, 62(1), 1-40.
22. Matlock, T., Holmes, K.J., Srinivasan, M., & **Ramscar, M.** (2011). Even abstract motion influences the understanding of time. Metaphor and Symbol, 26(4), 260-271.
23. **Ramscar, M.** (2010). Computing machinery and understanding. Cognitive Science, 34(6), 966-971.
24. **Ramscar, M.**, Yarlett, D., Dye, M., Denny, K., & Thorpe, K. (2010). The Effects of Feature-Label-Order and their implications for symbolic learning. Cognitive Science, 34(6), 909-957.
25. **Ramscar, M.**, Matlock, T., & Dye, M. (2010). Running down the clock: the role of expectation in our understanding of time and motion. Language and Cognitive Processes, 25(5), 589-615.
26. Thompson-Schill, S., **Ramscar, M.**, & Chrysikou, M. (2009). Cognition without control: When a little frontal lobe goes a long way. Current Directions in Psychological Science, 8(5), 259-263.

27. St. Clair, M., Monahan, P., & **Ramscar, M.** (2009). Relationships between language structure and language learning: The suffixing preference and grammatical categorization. Cognitive Science, 33(7): 1317-1329.
28. **Ramscar, M.** & Yarlett, D.. (2007). Linguistic self-correction in the absence of feedback: A new approach to the logical problem of language acquisition Cognitive Science, 31, 927-960.
29. **Ramscar, M.** & Gitcho, N. (2007). Developmental change and the nature of learning in childhood. Trends In Cognitive Science, 11(7), 274-279.
30. Alloway, T.P., Corley, M., & **Ramscar, M.** (2006). Seeing ahead: Experience and language in spatial perspective. Memory and Cognition, 34, 380-386.
31. Matlock, T, **Ramscar, M.**, & Boroditsky, L. (2005). The experiential link between spatial and temporal language. Cognitive Science, 29, 655-664.
32. **Ramscar, M.** & Yarlett, D. (2003) Grounding semantics in analogical processing: An environmental approach. Cognitive Science, 27, 41-71.
33. **Ramscar, M.** (2002). The role of meaning in inflection: Why the past tense doesn't require a rule. Cognitive Psychology, 45(2), 45-94.
34. Boroditsky, L. & **Ramscar, M.** (2002). The roles of body and mind in abstract thought. Psychological Science, 13(2), 185-188.
35. **Ramscar, M.**, Lee, J.R., & Pain, H.G. (1998). Reply to Per Galle's: 'Product Modelling: 20 years of Stalemate?' Design Studies, 19, 241-244.
36. **Ramscar, M.**, Lee, J.R., & Pain, H.G. (1996). A classification-based methodology for the integration of agent views within design systems. Design Studies, 17, 465-483.

## 5.2 Book Chapters

1. Blevins, J. P., Ackerman, F., Malouf, R. & **Ramscar, M.** (2017). 'Word and Paradigm Morphology' [pdf]. In J. Audring & F. Masini (eds.), The Oxford Handbook of Morphological Theory. Oxford: OUP.
2. Blevins, J.P., Milin, P., & **Ramscar, M.** (2017). The Zipfian Paradigm Cell Filling Problem. In F. Kiefer, J.P. Blevins, & H. Bartos (Eds.) Morphological Paradigms and Functions. Brill: Leiden.
3. Dye, M., Milin, P., Futrell, R., & **Ramscar, M.** (2017). A functional theory of gender paradigms. In F. Kiefer, J.P. Blevins, & H. Bartos (Eds.) Morphological Paradigms and Functions. Brill: Leiden.
4. **Ramscar, M.**, Dye, M., Blevins, J., & Baayen, R.H. (2016). Morphological development. In A. Bar On & D. Ravit (Eds.) Handbook of Communication Disorders. De Gruyter Mouton.
5. Blevins, J. P., Ackerman, F., Malouf, R. & **Ramscar, M.** 'Morphology as an adaptive discriminative system'. In H. Harley & D. Siddiqi (eds.), Morphological Metatheory, Benjamins, §10: 269–300
6. Baayen, R. H., Tomaschek, F., Gahl, S. & **Ramscar, M.** (2016). The Ecclesiastes principle in language change. In M. Hundt, S. Mollin & S. Pfenninger (Eds.), The Changing English Language: Psycholinguistic Perspectives. Cambridge, UK: Cambridge University Press.

7. **Ramscar, M.** & Port, R. (2015). Categorization (without categories). In E. Dawbroska & D. Divjak (Eds.), Handbook of Cognitive Linguistics. De Gruyter Mouton.
8. Baayen, R.H. & **Ramscar, M.** (2015). Abstraction, storage, and naive discriminative learning. In Dabrowska, E. and Divjak, D. (eds.), Handbook of Cognitive Linguistics, 99-120. De Gruyter Mouton.
9. **Ramscar, M.** & Baayen, R.H. (2014). Learning and cognitive maturation. In S. Krauss Whitbourne (Ed.), The Encyclopedia of Adulthood and Aging. Wiley-Blackwell.
10. **Ramscar, M.**, Boroditsky, L., & Matlock, T. (2010). Time, motion and meaning - the experiential basis of abstract thought. In Language is spatial, not special: Using space for language and memory. L. Smith, K. Mix, & M. Gasser (Eds.), Spatial Foundations of Cognition and Language. Oxford University Press.
11. Hahn, U. & **Ramscar, M.** (2001). Mere similarity? In U. Hahn & M. Ramscar, (eds.) Similarity and Categorization. Oxford: Oxford University Press.
12. **Ramscar, M.** & White, R.H. (1993). A Goal Driven Approach to Knowledge Extraction. In H. Kangassola (ed) Information and Knowledge Modelling - Frontiers in Artificial Intelligence. Amsterdam: ISO Press. 196-206.

### 5.3 Books

**Ramscar, M.** (*in prep*). The Importance of Being Wrong: What the Discriminating Thinker Needs to Know about the Mind.

### 5.4 Edited Volumes & Proceedings

1. Hahn, U. & **Ramscar, M.** (Eds.) (2001). Similarity and Categorization. Oxford: Oxford University Press.
2. **Ramscar, M.**, Hahn, U., Pain, H., & Cambouropoulos, C. (Eds.) (1997). Proceedings of the International Workshop on Similarity and Categorization, University of Edinburgh 1997. Department of Artificial Intelligence, University of Edinburgh.

### 5.5 Journal Abstracts

1. Davidenko, N., Remus, D., **Ramscar, M.**, & Grill-Spector, K. (2008). Stronger face-selective responses to typical versus distinctive faces when stimulus variability is controlled. Journal of Vision, 8(6), 531.
2. Davidenko, N., & **Ramscar, M.** (2005). The distinctiveness effect reconsidered: Poorer recognition of distinctive face silhouettes. Journal of Vision, 5(8), 981.

### 5.6 Commentaries

1. **Ramscar, M.** (2003). The past-tense debate: exocentric form versus the evidence. Trends in Cognitive Science, 7(3), 107-8.
2. Yarlett D. & **Ramscar M.** (2003). Overfurnishing Empiricism? Metascience, 12(3), 279-303.
3. Boroditsky, L. & **Ramscar, M.** (2001). "First, we assume a spherical cow..." Tenenbaum & Griffiths, Generalization, Similarity, and Bayesian Inference. Behavioral & Brain Sciences.

## 5.7 Conference Publications

1. **Ramscar, M.**, Sun, C-C., Hendrix, P. & Baayen, R. H. (2016). The mismeasurement of mind: How neuropsychological testing creates a false picture of cognitive aging. Proceedings of the 38th Annual Conference of the Cognitive Science Society, Philadelphia, PA.
2. Dye, M., Johns, B. T., Jones, M.N., & **Ramscar, M.** (2016). The structure of names in memory: Deviations from uniform entropy impair memory for linguistic sequences. Proceedings of the 38th Annual Conference of the Cognitive Science Society, Philadelphia, PA.
3. Blevins, J., Milin, P., & **Ramscar, M.** (2015). Zipfian discrimination. In Vito Pirrelli, Claudia Marzi, Marcello Ferro (eds.): Word Structure and Word Usage. Proceedings of the NetWordS Final Conference, Pisa: 29–31.
4. Blevins, J. & **Ramscar, M.** (2014) Uncertainty and discriminability in information-theoretic WP. Symposium on Information Theory in Morphology, 16th International Morphology Meeting, Budapest, Hungary.
5. **Ramscar, M.**, Hendrix, P., & Baayen, R.H. (2013). The myth of cognitive decline. Proceedings of the 35th Meeting of the Cognitive Science Society, Berlin, Germany.
6. **Ramscar, M.**, Smith, A.H., Dye, M., Futrell, R., Hendrix, P., Baayen, R.H., & Starr, R. (2013) The ‘universal’ structure of name grammars and the impact of social engineering on the evolution of natural information systems. Proceedings of the 35th Meeting of the Cognitive Science Society, Berlin, Germany.
7. **Ramscar, M.**, Dye, M., Popick, H., & O’Donnell-McCarthy, F. (2011). How children learn to value numbers: Information structure and the acquisition of numerical understanding. Proceedings of the 33rd Meeting of the Cognitive Science Society, Boston, MA.  
\* **Winner of the CaSL Prize from the Institute of Education Sciences** \*
8. **Ramscar, M.**, Suh., E., & Dye, M. (2011). A Steep Price to Pay? On the Costs and Benefits of Learning Relative Pitch. Proceedings of the 33rd Meeting of the Cognitive Science Society, Boston, MA.
9. **Ramscar, M.**, Klein., J., Dye, M., Aguirre, N., & Ruiz, L.D. (2011). Informativity versus logic: Children and adults take different approaches to word learning. Proceedings of the 33rd Meeting of the Cognitive Science Society, Boston, MA.
10. Popick, H., Dye, M., Kirkham, N., & **Ramscar, M.** (2011). Investigating how Infants Learn to Search in the A-not-B Task. Proceedings of the 33rd Meeting of the Cognitive Science Society, Boston, MA.
11. November, A. & **Ramscar, M.** (2011). Breaking the World into Symbols. Proceedings of the 33rd Meeting of the Cognitive Science Society, Boston, MA.
12. Kao, J., Ryan, R., Dye, M., & **Ramscar, M.** (2010). An acquired taste: How reading literature affects sensitivity to word distributions when judging literary texts. Proceedings of the 32nd Meeting of the Cognitive Science Society, Portland, OR.
13. Kosaraju, R., Dye, M., & **Ramscar, M.** (2010). Of Frames and Frequencies: How Early Language Production is Influenced by the Distribution. Proceedings of the 36th Meeting of the Society for Philosophy & Psychology, Portland, OR

14. **Ramscar, M.** & Dye, M. (2009). No representation without taxation: The costs and benefits of learning to conceptualize the environment. 2<sup>nd</sup> International Analogy Conference, Sophia, Bulgaria.
15. **Ramscar, M.** & Dye, M. (2009). Error and expectation in language learning: An inquiry into the many curious incidents of ‘mouses’ in adult speech. Proceedings of the 31<sup>st</sup> Meeting of the Cognitive Science Society, Amsterdam, Netherlands.
16. **Ramscar, M.**, Yarlett, D., Dye, M., & Kalchbrenner, N. (2009). The Feature-Label-Order Effect in Symbolic Learning. Proceedings of the 31<sup>st</sup> Meeting of the Cognitive Science Society, Amsterdam, Netherlands.
17. **Ramscar, M.**, Dye, M., Witten, J., & Klein, J. (2009). Two routes to cognitive flexibility: Learning and response conflict resolution in the dimensional change card sort task. Proceedings of the 31<sup>st</sup> Meeting of the Cognitive Science Society, Amsterdam, Netherlands.
18. Arnon, I., & **Ramscar, M.** (2009). Granularity and the acquisition of grammatical gender: How order of acquisition affects what gets learned. Proceedings of the 31<sup>st</sup> Meeting of the Cognitive Science Society, Amsterdam, Netherlands
19. Arnon, I. & **Ramscar, M.** (2008). How order-of-acquisition shapes language learning: the case of grammatical gender. Boston University Conference on Language Development, Boston, MA.
20. **Ramscar, M.**, Thorpe, K., & Denny, K. (2007). Surprise in the learning of color words. Proceedings of the 29<sup>th</sup> Meeting of the Cognitive Science Society, Nashville, TN.
21. Bannard, C. & **Ramscar, M.** (2007). Reading time evidence for storage of frequent multiword sequences. Proceedings of Architectures and Mechanisms for Language Processing 2007, Turku, Finland.
22. Smith, A.H. & **Ramscar, M.** (2007). First Language Translations in New Language Learning. Proceedings of the Second European Cognitive Science Conference, Delphi, Greece.
23. Davidenko, N., & **Ramscar, M.** (2003). Age and gender: similarly cued from silhouetted face profiles. Proceedings of the 25th Annual Conference of the Cognitive Science Society. Boston, MA.
24. Yarlett, D. & **Ramscar, M.** (2003). Belief Revision in Causal Induction Proceedings of the 25th Annual Conference of the Cognitive Science Society. Boston, MA.
25. Yarlett, D. & **Ramscar, M.** (2002). A Quantitative Model of Counterfactual Reasoning. Advances in Neural Information Processing Systems 14, MIT Press.
26. **Ramscar, M.** (2002). When the fly flied and when the fly flew: The effects of semantics on past tense inflection, Proceedings of the 24th Annual Conference of the Cognitive Science Society. Fairfax, VA.
27. Yarlett, D. & **Ramscar, M.** (2002). Uncertainty in causal and counterfactual inference. Proceedings of the 24th Annual Conference of the Cognitive Science Society. Fairfax, VA.
28. Boroditsky, L., Ham, W., & **Ramscar, M.** (2002). What is universal in event perception? Comparing English & Indonesian speakers. Proceedings of the 24th Annual Conference of the Cognitive Science Society. Fairfax, VA.

29. Lynott, D. & **Ramscar, M.** (2001). Can we model conceptual combination using distributional information? Proceedings of the Twelfth Irish Conference on Artificial Intelligence and Cognitive Science, NUI, Maynooth.
30. **Ramscar, M.** (2001). The influence of semantics on past-tense inflection. Proceedings of the 23rd Annual Conference of the Cognitive Science Society, University of Edinburgh.
31. Boroditsky, L, **Ramscar, M.** & Frank, M. (2001) The roles of body and mind in abstract thought. Proceedings of the 23rd Annual Conference of the Cognitive Science Society, University of Edinburgh.
32. MacDonald, S. & **Ramscar, M.** (2001). Testing the Distributional Hypothesis: The Influence of Context on Judgements of Semantic Similarity. Proceedings of the 23rd Annual Conference of the Cognitive Science Society, University of Edinburgh.
33. Yarlett, D. & **Ramscar, M.** (2001). Structural Determinants of Counterfactual Reasoning. Proceedings of the 23rd Annual Conference of the Cognitive Science Society, University of Edinburgh.
34. Alloway, T, **Ramscar, M.** & Corley, M. (2001). The Role of Language on Thought in Spatio-temporal Metaphors. Proceedings of the 23rd Annual Conference of the Cognitive Science Society, University of Edinburgh.
35. Connell, L. & **Ramscar, M.** (2001). Using Distributional Measures to Model Typicality in Categorization. Proceedings of the 23rd Annual Conference of the Cognitive Science Society, University of Edinburgh.
36. Connell, L. & **Ramscar, M.** (2001). Modeling canonical and contextual typicality using distributional measures. Proceedings of the Third International Conference on Cognitive Science, Beijing, China.
37. Lynott, D. & **Ramscar, M.** (2001). Modeling conceptual combination using distributional information. Proceedings of the Third International Conference on Cognitive Science, Beijing, China.
38. **Ramscar, M.** & Yarlett, D. (2000). The use of a high-dimensional, “environmental” context space to model retrieval in analogy and similarity-based transfer. Proceedings of the 22nd Annual Conference of the Cognitive Science Society, University of Pennsylvania.
39. Yarlett, D. & **Ramscar, M.** (2000). Structure-Mapping Theory and Lexico-Semantic Information. Proceedings of the 22nd Annual Conference of the Cognitive Science Society, University of Pennsylvania.
40. Heneveld, A., Bundy, A., **Ramscar, M.**, & Richardson, J. (2000). Memory-Based Problem Solving and Schema Induction in Go, Proceedings of the 22nd Annual Conference of the Cognitive Science Society, University of Pennsylvania.
41. **Ramscar, M.** (2000). Evidence for the processing of re-representations during the mapping of externally represented analogies. Proceedings of the 22nd Annual Conference of the Cognitive Science Society, University of Pennsylvania.
42. **Ramscar, M.** & Hahn, U. (1998). Wittgenstein and the ontological status of analogy. In Holyoak, K, Gentner, D and Kokinov, B (eds.) Advances in Analogy Research. Sofia, Bulgaria: New Bulgarian University Press.



43. **Ramscar, M.** & Hahn, U. (1998). What family resemblances are not: The continuing relevance of Wittgenstein to the study of concepts and categories. Proceedings of the 20th Annual Conference of the Cognitive Science Society, University of Wisconsin - Madison.
44. Darrington, S., Lingstadt, T. & **Ramscar, M.** (1998). Analogy as a sub-process of categorisation. Proceedings of the 20th Annual Conference of the Cognitive Science Society, University of Wisconsin - Madison.
45. **Ramscar, M.**, Pain, H., Darrington, S., & Lee, J. (1998). Examples and generalisations. Proceedings of the 20th Annual Conference of the Cognitive Science Society, University of Wisconsin - Madison.
46. **Ramscar, M.** (1997). Wittgenstein and the representation of psychological categories, Similarity and categorisation: SimCat 97, Department of Artificial Intelligence, University of Edinburgh.
47. **Ramscar, M.**, Pain, H., & Cooper, R. (1997). Is there a place for semantic similarity in the analogical mapping process? Proceedings of the 19th Annual Conference of the Cognitive Science Society, Stanford University.
48. **Ramscar, M.** & Pain, H. (1996). Can a real distinction be made between cognitive theories of analogy and categorisation? Proceedings of the 18th Annual Conference of the Cognitive Science Society, University of California, San Diego.

## **6. Presentations**

### **6.1 Invited Talks, Plenary, & Colloquia**

1. (2017). Invited Talk: Symposium on Quantitative Morphology, 10th International Morphological Processing Meeting, SISSA, Trieste, Italy.
2. (2017). Invited Talk: Leopoldina (German National Academy of Sciences) Workshop on Replication in Psychology, Würzburg University, Germany
3. (2017). Invited Colloquium: Linguistics Department, Cambridge University, UK.
4. (2016). Invited Colloquium: Institute for Mathematical Behavioral Sciences, UC Irvine.
5. (2016). Invited Colloquium: Division of Psychology & Language Sciences, University College London, UK.
6. (2016). Invited Colloquium: Department of Comparative Linguistics, Zurich University, Switzerland
7. (2016). Invited Plenary: 17th International Morphology Meeting, University of Vienna, Austria.
8. (2015). Invited Keynote: Workshop on “Studying Language Learning: From the laboratory to the classroom,” Tübingen University, Germany.
9. (2015). Invited Colloquium: Psychology Department, Würzburg University, Germany.
10. (2015). Invited Talk: Workshop on the Future of Aging: Centre for Integrative Neuroscience, Tübingen University, Germany.

11. (2015). Invited Talk: Workshop on Communication Deficits, Bremen University, Germany.
12. (2015). Invited Colloquium: Linguistics Department, Lyon University, France.
13. (2015). Invited Talk: Workshop on Frequency metrics in psycho- and sociolinguistics, Freiburg University, Germany
14. (2015). Invited Talk: First International Quantitative Morphology Conference, University of Belgrade, Serbia.
15. (2015). Invited Talk: Workshop on Child Language Development, University of Manchester, UK.
16. (2015). Invited Colloquium: Department of Linguistics, Saarland University, Germany.
17. (2015). Invited Colloquium: Department of Cognitive Science, Rensselaer Polytechnic Institute, New York.
18. (2014). Invited Colloquium: Basque Center on Cognition Brain and Language, San Sebastián.
19. (2014). Invited Colloquium: Department of Psychology, University of Sheffield, UK.
20. (2014). Invited Talk: Workshop on Corpus resources for quantitative and psycholinguistic analysis. Eszterházy College, Hungary
21. (2014). Invited Talk: The Stuff Words are Made of: An International Conference on the Cross-linguistic Comparison of Indo-Germanic and Semitic Languages. University of Konstanz, Germany.
22. (2014). Invited Talk: Workshop on Information Theory, 8th International Conference on Construction Grammar, University of Osnabrück, Germany.
23. (2014). Invited Talk: Symposium on Child Language Development, Max Plank Institute of Psycholinguistics, Nijmegen, Netherlands.
24. (2014). Invited Talk: Linguistics Department, Lyon University, France.
25. (2014). Invited Talk: SfSB, Tübingen University, Germany.
26. (2013). Invited Colloquium: Laboratoire de Psychologie Cognitive, CNRS, Aix-Marseille Université, France.
27. (2013). Invited Talk: "What Can We Do With 500 Billion Words?" Workshop, Indiana University, Bloomington, IN.
28. (2013). Invited Talk: Forum Scientiarum – Kognitionswissenschaft, University of Tübingen, Germany.
29. (2013). Invited Talk: Symposium on Discriminative Learning & Morphology, 8th International Morphological Processing Conference, Cambridge, UK.
30. (2013). Invited Talk: Artificial Grammar Learning: Learnability, Complexity, and Meaning, University of Tübingen, Germany.
31. (2013). Invited Colloquium: Cognitive Development Center, Central European University, Budapest, Hungary.
32. (2013). Invited Colloquium: Department of Psychology, Warwick University, UK.
33. (2013). Invited Colloquium: Department of Cognitive, Perceptual and Brain Sciences, University College London, UK.
34. (2013). Invited Colloquium: Cognitive Science Institute, Osnabrück University, Germany.

35. (2013). Invited Colloquium: Donders Centre for Cognition, Nijmegen University, Netherlands.
36. (2013). Invited Talk: Department of Psychology, Indiana University, Bloomington, IN.
37. (2013). Invited Talk: Department of Speech & Hearing, Indiana University, Bloomington, IN.
38. (2013). Invited Plenary: President's Symposium, Annual Meeting of the Society For Computers in Psychology, Toronto, Canada.
39. (2012). Invited Talk: Workshop on Information Density and Linguistic Variation, DGfS, Frankfurt, Germany.
40. (2013). Invited Colloquium: Department of Psychology, Indiana University, Bloomington.
41. (2011). Invited Plenary: B.F. Skinner Lecture, 37<sup>th</sup> Annual Association of Behavioral Analysis International Convention, Denver, CO.
42. (2011). Invited Talk: Quantitative Measures in Morphology and Morphological Development, UC San Diego, CA.
43. (2011). Invited Talk: Department of Psychology, UC San Diego, CA.
44. (2011). Invited Talk: Department of Psychology, University of Pennsylvania, PA.
45. (2011). Invited Talk: Department of Psychology, Princeton University, NJ.
46. (2010). Invited Talk: Symbolic System Forum, Stanford, CA.
47. (2009). Invited Talk: Stanford Humanities Center Research Workshop, *Uncertainty in Language*, Stanford, CA.
48. (2009). Invited Colloquium: Department of Psychology, UC Merced, CA.
49. (2008). Invited Talk: Department of Brain and Cognitive Sciences, MIT, MA.
50. (2008). Invited Colloquium: Sackler Institute, Cornell University, NY.
51. (2008). Invited Colloquium: Institute for Research in Cognitive Science, University of Pennsylvania, PA.
52. (2008). Invited Talk: Social Psychology Seminar, Stanford University, CA.
53. (2007). Invited Talk: Psychology of Language Tea, Department of Linguistics, Stanford University, CA.
54. (2007). Invited Colloquium: Department of Psychology, UT Austin, TX.
55. (2006). Invited Colloquium: Distinguished Speaker Series, Department of Cognitive Science, UC San Diego, CA.
56. (2006). Invited Talk: Department of Psychology, UT Austin, TX.
57. (2006). Invited Talk: Sackler Institute, Cornell University, NY.
58. (2006). Invited Colloquium: Max Planck Institute of Evolutionary Anthropology, Leipzig, Germany.
59. (2005). Invited Colloquium: Department of Cognitive Science, UC San Diego, CA.
60. (2005). Invited Colloquium: Department of Brain and Cognitive Sciences, MIT, MA.
61. (2005). Invited Colloquium: Department of Linguistics, UC San Diego, CA.
62. (2004). Invited Colloquium: Department of Psychology, UC Berkeley, CA.
63. (2004). Invited Colloquium: Department of Psychology, Manchester University, UK.

64. (2003). Invited Colloquium: Department of Brain and Cognitive Sciences, MIT, MA.
65. (2003). Invited Talk: Distinguished Lecture Series, Bing Nursery School, Stanford University, CA.
66. (2003). Invited Talk: Developmental Brown Bag, Stanford University, CA.
67. (2003). Invited Talk: Workshop on Spatial Foundations of Language, Indiana University, Bloomington, IN.
68. (2003). Invited Talk, Max Plank Institute of Psycholinguistics, Nijmegen, Netherlands.
69. (2003). Invited Colloquium: Department of Psychology, UC Santa Cruz, CA.
70. (2003). Invited Talk: Experimental Psychology Society Meeting, University College London, UK.
71. (2003). Invited Talk: Symbolic Systems Forum, Stanford University, CA.
72. (2003). Invited Talk: Social Psychology Seminar, Stanford University, CA.
73. (2002). Invited Talk: "FRISEM" Cognitive Psychology Seminar, Stanford University, CA.
74. (2002). Invited Talk: Developmental Brown Bag, Stanford University, CA.
75. (2002). Invited Colloquium: Department of Psychology, Carnegie Mellon University, PA.
76. (2002). Invited Colloquium: Department of Psychology, Stanford University, CA.
77. (2001). Invited Colloquium: Max Planck Institute of Evolutionary Anthropology, Leipzig, Germany.
78. (2001). Invited Colloquium: Department of Psychology, Stanford University, CA.
79. (2001). Invited Colloquium: Linguistic Circle, Department of Linguistics, University of Edinburgh, UK.
80. (2001). Invited Talk: ICCS/HCRC Seminar, Division of Informatics, University of Edinburgh, UK.
81. (2000). Invited Talk: Department of Psychology, Stanford University, CA.
82. (2000). Invited Colloquium: Department of Computer Science, University College Dublin, Ireland.
83. (2000). Invited Talk: ICCS/HCRC Seminar, Division of Informatics, University of Edinburgh, UK.
84. (1999). Invited Talk: Division of Informatics, University of Edinburgh, UK.

## **6.2 Talks at Conferences & Workshops**

1. (2016) 38<sup>th</sup> Annual Meeting of the Cognitive Science Society, Philadelphia, PA
2. (2016). Anamorphosys Workshop. Lyon, France.
3. (2016). International Meeting of the Psychonomic Society, Granada, Spain
4. (2016). Workshop on Information Theory in Morphology: 17th International Morphology Meeting, University of Vienna, Austria.
5. Symposium Organizer / Chair. (2015). "Generative and Discriminative Models in Cognitive Science", 37<sup>th</sup> Annual Meeting of the Cognitive Science Society, Pasadena, CA. Co-organized with Bradley Love.

6. (2014). Symposium on Information Theory in Morphology, 16th International Morphology Meeting, Budapest, Hungary. Joint presentation with Jim Blevins.
7. (2014). 55th Annual Meeting of the Psychonomic Society, Long Beach, California.
8. (2013). 54<sup>th</sup> Annual Meeting of the Psychonomic Society, Toronto, Canada.
9. (2013). 35th Annual Meeting of the Cognitive Science Society, Berlin, Germany.
10. (2013). 46th Annual Meeting of the Society of Mathematical Psychology, Potsdam, Germany.
11. (2012). 86<sup>th</sup> Annual Meeting of the Linguistic Society for America (LSA), Portland.
12. (2012). 8th International Conference on the Mental Lexicon, Montreal, Canada.
13. (2011). 18<sup>th</sup> Annual Cognitive Neuroscience Meeting, San Francisco, CA.
14. (2011). 33<sup>rd</sup> Annual Meeting of the Cognitive Science Society, Boston, MA.
15. (2011). 44<sup>th</sup> Annual Meeting of the Society for Mathematical Psychology, Boston, MA.
16. (2010). 32<sup>nd</sup> Meeting of the Cognitive Science Society, Portland, OR.
17. (2010). Conceptual Structure Discourse, and Language Conference, UCSD, San Diego, CA
18. (2009). 9<sup>th</sup> International Conference on Cognitive Modelling, Manchester, UK.
19. (2009). 42<sup>nd</sup> Annual Meeting of the Society for Mathematical Psychology, Amsterdam, Netherlands.
20. (2009). 2<sup>nd</sup> International Analogy Conference, Sofia, Bulgaria.
21. (2008). 29<sup>th</sup> Annual Conference of the Cognitive Science Society, Nashville, TN.
22. (2007). 29th Annual Conference of the Cognitive Science Society, Nashville, Tennessee, USA.
23. (2004). 45<sup>th</sup> Annual Meeting of the Psychonomic Society, Minneapolis.
24. (2003). Workshop on Syntax, Semantics and Statistics, Neural Information Processing Systems, Vancouver, B.C.
25. (2003). Boston University Conference on Language Development, Boston, MA.
26. (2003). 25<sup>th</sup> Annual Conference of the Cognitive Science Society, Boston, MA.
27. (2003). 8<sup>th</sup> International Cognitive Linguistics Conference - Special Session on Fictive Motion.
28. (2002). 24<sup>th</sup> Annual Conference of the Cognitive Science Society, George Mason University.
29. (2002). 43<sup>rd</sup> Annual Meeting of the Psychonomic Society, Kansas City.
30. (2002). Architectures and Mechanisms for Language Processing (AMLaP), Canary Islands.
31. (2001). 7<sup>th</sup> International Cognitive Linguistics Conference, UC Santa Barbara.
32. (2001). 23<sup>rd</sup> Annual Conference of the Cognitive Science Society, University of Edinburgh.

33. (2001). Meeting of European Society for Cognitive Psychology / BPS, University of Edinburgh
34. (2000). 22<sup>nd</sup> Annual Conference of the Cognitive Science Society, University of Pennsylvania.
35. (1999). 20<sup>th</sup> Annual Conference of the Cognitive Science Society, Wisconsin-Madison.
36. (1998). International Workshop on Analogy, Sofia, Bulgaria.
37. (1997). 19th Annual Conference of the Cognitive Science Society, Stanford University.
38. (1997). International Workshop on Similarity and Categorisation, Edinburgh.
39. (1997). EuropIA 97, Department of Architecture, University of Edinburgh.
40. (1996). 18<sup>th</sup> Annual Conference of the Cognitive Science Society, San Diego.

## **7. Teaching & Mentorship**

### **7.1 Courses Taught**

#### **Graduate**

- Foundations of Cognition
- Information Theoretic Models of Language and Cognition
- Aping: Imitation and the Development of Control
- Empirical and Analytical Research Methods
- Themes and Methods in Cognitive Psychology
- Coding, Representation & Meaning
- Advanced Topics in Cognitive Modelling

#### **Undergraduate**

- Foundations of Cognition
- Birds to Words: Communication Cognition and Language
- Introduction to Linguistics
- Philosophical Issues in Artificial Intelligence
- Introduction to Cognitive Modelling
- Introduction to Cognitive Science
- Advanced Prolog Programming

### **7.2 Syllabus Design**

Artificial Intelligence Syllabus & Teaching committees (1997-2001)  
 Cognitive Science Syllabus & Teaching committees (1999-2001)  
 Course Organiser for 1st Year Artificial Intelligence (1997-1999)

### **7.3 Advising**

#### ***University of Tübingen***

##### **Doctoral**

Peter Hendrix	Ph.D Student, Linguistics (current)
June Sun	Ph.D Student, Linguistics (current)

## **Masters**

Dorothy Hoppe	MSc Linguistics (2016); PhD student in Linguistics, Universiteit Groningen.
Philip Schulz	MSc Linguistics (2013); PhD student in Machine Translation, Universiteit van Amsterdam.

## **Undergraduate (Honors)**

Josh Ring	B.S. Cognitive Science (2015); MSc student in Artificial Intelligence, Radboud University Nijmegen.
Matthias Villing	B.S. Cognitive Science (2013); Watchmaker.

## ***Stanford University***

### **Doctoral**

Inbal Arnon	Faculty Lecturer in Psychology, University of Haifa.
Nicolas Davidenko	Assistant Professor of Psychology, UC Santa Cruz.
Daniel Yarlett	Data Scientist, Flywheel Networks.
Asha Halima Smith	Researcher, Proteus Biomedical.
Adam November	Data Analyst, Disney Interactive Media Group.

### **Masters**

Michael C. Frank	Associate Professor of Psychology, Stanford University.
Kevin J. Holmes	Assistant Professor of Psychology, Colorado College.
Joseph Klein	Product Manager at Playdom.

### **Undergraduate (Honors)**

Ariel James	NSF Graduate Research Fellow; PhD student in Psychology at the University of Illinois at Urbana-Champaign.
Justine Kao	Robert M. Golden Medal for Honors Thesis; NSF Graduate Research Fellow; PhD student in Psychology at Stanford University.
Richard Futrell	Robert M. Golden Medal for Honors Thesis; PhD student in Brain & Cognitive Science at MIT.

## ***University of Edinburgh***

### **Masters**

Matthijs Van der Meer	Assistant Professor of Biology at the Centre for Theoretical Neuroscience, University of Waterloo.
Danielle Matthews	Professor of Developmental Psychology at Sheffield University.
Dermot Lynott	Best Dissertation Prize (2000), Senior Lecturer in Psychology (Faculty Rank) at Lancaster University.

Louise Connell	Senior Lecturer in Psychology (Faculty Rank) at Lancaster University.
Malte Hübner	Best Dissertation Prize (2001), German Council of Economic Experts.
Daniel Yarlett	Best Dissertation Prize (1999), Data Scientist at Flywheel.
Robert Ahrens	Principle Software Engineer at Compete, Inc.
Annabel Harrison	Translator and Editor.

## **8. Service Activities**

### **8.1 Professional Affiliations**

Psychonomic Society  
 Cognitive Science Society  
 Linguistic Society of America  
 American Psychological Society  
 Society for Mathematical Psychology  
 Society for Computers in Psychology

### **8.2 Ad Hoc Reviewing**

Nature, Cognitive Neuroscience, Journal of Cognitive Neuroscience, Frontiers in Systems Neuroscience, Language, Language & Cognitive Processes, Psychological Review, Psychological Science, Child Development, Developmental Science, Developmental Psychology, Cognitive Science, Cognitive Psychology, Cognition, Memory and Cognition, Journal of Experimental Psychology: Learning Memory & Cognition, Psychonomic Bulletin and Review, PloS One, Trends In Cognitive Sciences, Quarterly Journal of Experimental Psychology, Design Studies, Annual Conference of the Cognitive Science Society, Annual Conference of the European Artificial Intelligence Society (ECAI), Mental Lexicon Conference.

### **8.3 Grant Reviewing**

National Science Foundation (US)  
 Engineering and Physical Science Research Council (UK)

### **8.4 University Service**

2009	Departmental Safety committee
2008	Departmental Computer committee
2005-2007	Stanford Institutional Review Board for Human Participants (Non-Medical)
2002-2006	Graduate Admission committee
1997-2001	Degree Programme Co-ordinator for the AI & Psychology Degree
2000-2001	Degree Programme Co-ordinator for the AI & Linguistics Degree

## **9. Popular Outreach**

### **9.1 Media Coverage**

Our research has been covered widely in the mainstream media, by outlets such as: BBC World Service, BBC Radio 4, National Geographic, the New York Times, Scientific American Mind, Discover, the Los Angeles Times, the Guardian, Business Insider, The Telegraph, Forbes, the Huffington Post, US News &



World Reports, the Atlantic Monthly, Wired, Science Daily, the Independent, the National Post, the Times of India, Medical Daily, Utne Reader, and Psychology Today, among others.

## **9.2 Research Blogging**

“The Importance of Being Wrong”: <https://ramscar.wordpress.com/>